

Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG):

R1ABCO

Interior White Fir, Northeastern California

General Information

Contributors (additional contributors may be listed under "Model Evolution and Comments")

Modelers

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Reviewers

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Vegetation Type

Forested

Dominant Species*

ABCO

PIPO

PIMO3

General Model Sources

- Literature
- Local Data
- Expert Estimate

LANDFIRE Mapping Zones

3 6
4
5

Rapid Assessment Model Zones

- California
- Pacific Northwest
- Great Basin
- South Central
- Great Lakes
- Southeast
- Northeast
- S. Appalachians
- Northern Plains
- Southwest
- N-Cent.Rockies

Geographic Range

Mountains of northeastern California, east of the Cascade range.

Biophysical Site Description

Generally above 5,000 feet to approximately 9,000 feet. Occurs on all aspects and slopes and a wide variety of soil types. Precipitation usually exceeds about 20 inches, and is mostly in the form of snow. Soil temperature regimes are frigid. Bedrock geology is volcanic, and the most common soil orders are Mollisols and Entisols.

Vegetation Description

This type has been called "depauperate mixed conifer" by Griffin and Critchfield (1972) because it occurs in bioclimatic regions that are too cold and too dry to support the other conifer species expected in the California mixed conifer. White fir is the dominant conifer. Other conifers that occur in the mix include incense cedar, ponderosa and/or Jeffrey pine, and, at higher elevations, western white pine, Washoe pine, and lodgepole pine. Aspen is a common associate, particularly at higher elevations. Sugar pine, oaks, and Douglas fir are absent. Understory vegetation in closed stands is sparse. Herbs such as long-stolon sedge, Brainard's sedge, Prince's Pine, wintergreen occur with low cover in the understory of closed stands. Understory shrubs occur in more open conditions and include Scouler willow, greenleaf manzanita, snowbrush, serviceberry, and sticky current. Bush chinquapin is somewhat uncommon. Shrubs common in the California Mixed Conifer such as dogwood, vine maple, mountain whitethorn and huckleberry oak are absent in this colder, drier Interior White Fir region. Subalpine sagebrush is a common associated shrub in openings at the higher elevations of the type.

Disturbance Description

In the historical scenario, replacement fires are estimated to occur about every 145 years, and fires of all

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

kinds (surface, replacement, mixed) are estimated to occur about every 70 years. Aboriginal burning was probably not very important in this type. Insects (e.g., bark beetle) and drought mortality are probably more important than is depicted in this model.

Adjacency or Identification Concerns

In the Warner Mountains, this true fir type is sandwiched between a white fir-yellow pine (either PIPO or PIJE, or both) zone at lower elevations and a white fir-whitebark pine zone at higher elevations. Red fir is not present because of the cold, dry conditions.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Patches tend to be fairly large where soils and geology permit. Patches are smaller where the landscape is broken up by areas with shallow soils, or rock outcrops.

Issues/Problems

Very little information on fire history is available. Samples from the Warner Matins., collected by Sidney Smith (with data analyzed by Carl Skinner at PSW Redding) suggests an average fire return interval of 19.6 years (range = 8.4-35.3). This would suggest that the Warner Matins. numbers are not anomalous and that until more is known, the average FRI should be less than what this model is based on. Lots of lightning ignition in this area. No information is available on the distribution of replacement/mixed/surface fire, but some reviewers expect more mixed/surface fires than replacement. Something like 200/45/45 for replacement/mixed/surface might be more representative than the existing numbers (145/210/325). This distribution would likely result in more late seral and less early seral than the model suggests.

Model Evolution and Comments

Primary succession pathway after stand replacement disturbance is early to closed mid-seral. Open mid-seral can only be achieved via a mixed severity fire in closed mid-seral. If there are some places where open mid-seral conditions can occur due to other biophysical constraints (i.e., a pathway from early directly to open mid-seral), then this model does not reflect this condition. The probability of replacement fire is greater in the late-seral open than mid-seral closed state.

Succession Classes
Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 30%

Early1 PostRep

Description

Early succession, after localized mortality, or mixed severity fire, comprised of grass, shrubs, and tree seedlings to saplings.

Indicator Species* and Canopy Position

ABCO
 PIPO
 PIMO3

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	65 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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Class B 20%

Mid1 Closed

Description

Pole to medium sized conifers with canopy cover greater than 35%.

Indicator Species* and Canopy Position

ABCO

PIPO

PIMO3

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	70 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class C 5%

Mid1 Open

Description

Pole to medium sized conifers with canopy cover less than 35%.

Indicator Species* and Canopy Position

ABCO

PIPO

PIMO3

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	34 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class D 10%

Late1 Open

Description

Overstory of large and very large trees with canopy cover less than 35%. Occurring in small to moderately-sized patches on southerly aspects and ridgetops.

Indicator Species* and Canopy Position

ABCO

PIPO

PIMO3

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	34 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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Class E 35 %

Late I Closed

Description

Overstory of large and very large trees with canopy cover greater than 35%. Occurring in small to moderately-sized patches on north aspects and lower slope positions. Understory characterized by medium and smaller-sized shade-tolerant conifers

Indicator Species* and Canopy Position

ABCO

PIPO

PIMO3

Upper Layer Lifeform

Herbaceous

Shrub

Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	85 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Disturbances

Non-Fire Disturbances Modeled

- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other:

Fire Regime Group: 3

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

Fire Intervals (FI):

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

Historical Fire Size (acres)

Avg:

Min:

Max:

Sources of Fire Regime Data

- Literature
- Local Data
- Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	145			0.0069	47
Mixed	210			0.00476	32
Surface	325			0.00308	21
All Fires	68			0.01474	

References

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Smith, S. and Davidson, B. 2003. User's Manual, Terrestrial Ecological Unit Inventory (TEUI), Land Type Associations, Modoc National Forest. USDA Forest Service Pacific Southwest Region. R5-TP-015, version

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

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